

REMARKS

In response to the Office Action mailed October 23, 2006, Applicants respectfully request reconsideration. Claims 1-21 are pending in this application. By way of this amendment, Base Claims 1, 7, 13, and 19 have been amended, Claim 20 has been cancelled, and no new claims have been added. The application is believed to be in condition for allowance for the following reasons.

Claim rejections under 35 U.S.C. § 101

The Office Action rejects Claim 20 under 35 U.S.C. §101. Claim 20 has been cancelled by way of this amendment.

Claim rejections under 35 U.S.C. § 103(a)

The Office Action rejects Claims 1-21 under 35 U.S.C. §103(a) as being unpatentable over Wang et al. (U.S. Patent 6,505,162), in view of Marx et al. (U.S. Patent 6,173,266).

In one embodiment, Applicants provide a computerized interface for managing a dialog between a computer and a user of the computer. As shown in Fig. 4 of Applicant's drawings, the computerized interface includes a prioritized speak queue 74, a dialog manager 56, and a turn manager 72. The prioritized speak queue 74 retains responses generated by the computer, including responses that can be spoken by a text to speech device, in response to spoken input from the user received by the computer through an audio input device. See Specification as originally filed, page 14, lines 25-29. The dialog manager 56 places the generated responses in the prioritized speak queue.

The turn manager 72 prioritizes audible rendering of the responses from the prioritized speak queue through an audio output device according to rules other than the order in which the responses are added to the prioritized speak queue and according to the priority of corresponding contexts associated with the responses in a context priority queue 78. See Specification as originally filed, page 18, lines 18-29. In this manner, the turn manager conducts a dialog in a polite non-interruptive manner that is subject to control by the user including allowing the user to change subjects and allowing the user to interrupt the dialog but not allowing the audible

rendering of a response to interrupt the user. If a response is interrupted by the user, the turn manger may reschedule the full response on the speak queue for delivery at a later, more appropriate time, thus, allowing the user to remain in control of the system. See Specification as originally filed, page 3, lines 2-12 and page 5, lines 1-8.

In contrast, Wang discloses a dialogue management system that is based on the searching of base tables. Each base table, such as the base table illustrated in Fig. 11(c), stores the dialogue states, a number of domain parameters, and a plurality of response actions corresponding to each dialogue state. At the beginning of a dialogue, the values of the system state are empty. Based on input from a user, the dialogue manager then updates the system state tables as shown in Fig. 8(a). When the dialogue manager finds a matching dialogue state in the base table illustrated in Fig. 11(a), such as S1, the dialogue manager enters the base table of a sub-dialogue as shown in Fig. 11(c) according to the response action of dialogue state S1. The dialogue manager also pushes the current base table (shown in Fig. 11(a)), the dialogue state (T1), and the goal (e.g., "ticket order") onto the stack as shown in Fig. 8(a).

The dialogue manager then searches for a matching state in the base table shown in Fig. 11(c). This process continues until the dialogue manager encounters a response action of returning to the previous base table. In this case, the information that was most recently pushed onto the stack is popped up. See col. 8, lines 36-38. The information is then passed to the action execution module 604 where an action such as a response semantic frame can be generated. See Fig. 6. The response semantic frame is then passed to the language generation module where appropriate sentences are generated in a target language. The speech synthesis module 105 finally synthesizes speech and provides a response to the user. See Fig. 1, and Col. 1, lines 27-40. Thus, Wang essentially discloses a dialogue management system that searches base tables to find matching dialogue states. The dialogue manager derives response actions as a function of the dialogue state from the base tables.

The dialogue management system, however, does not store response strings that can be submitted to a text-to-speech service, in a prioritized speak queue. It instead stores the current base table, the dialogue state, and the goal in a stack. The response actions must be derived from

matching the dialogue state with the dialogue states in the current base table. Therefore, Wang does not disclose a prioritized speak queue that includes "responses that can be spoken by a text to speech device" as claimed in now amended Claim 1. Support for this amendment is found in the Specification as originally filed at least at page 6, lines 22-26, page 14, lines 25-29, and in the drawings at Fig. 1, reference numeral 74.

Moreover, neither Wang nor Marx, alone or in combination, support user interruptions of the computer and prevent computer interruptions of the user in a polite manner, allowing the user to remain in control.

Marx allows the user to 'bargue-in' but does not teach a dialog manager that prevents the audible rendering of a response from interrupting the user. Wang teaches apologizing when a request cannot be satisfied. The polite manner as discussed in Applicants' specification does not simply entail issuing an apology. The polite manner of behavior includes: not interrupting the user when the user is talking, speaking when spoken to, asking permission before speaking delayed answers and notifications, always allowing changes of subject or interruptions from the user, and asking permission to re-ask questions that have been ignored. It also conforms to users' expectations of the natural "rhythm" of conversation by allowing adequate time between utterances, taking "turns" in a dialog, etc. See Specification as originally filed, page 21, lines 16-24. Thus, Wang nor Marx do not disclose a "turn manager conducting the dialog in a polite non-interruptive manner that is subject to control by the user including ... allowing the user to interrupt the dialog but not allowing the audible rendering of a response to interrupt the user" as recited in now amended Claim 1.

As described above, base Claims 1, 7, 13, and 19 recite a dialog management system that asynchronously manages the dialog between a user and a computer. Spoken input from the user can be asynchronously received by the computer from at least one of multiple applications. This allows the user to interrupt the current response to change subjects i.e., switch between different unrelated applications asynchronously. See Specification as originally filed, page 10, lines 17-24 and FIG. 3.

Wang teaches a system whereby the user enters information corresponding to a specific goal, for example, ordering a train ticket. The user enters departure time, departure station, destination, and arrival time. The system may initiate a sub-goal such as querying a database through a series of stack push and pop commands. However, all these actions are contained within a hierarchical task description table (HTDT) "T1: railroad service system". See FIG. 7 and column 3, lines 46-52. That is, the information is entered as part of a synchronous dialog between the user and the system within the same application of ordering a train ticket. Wang does not teach a system where the "spoken input from the user" is "asynchronously received by the computer" and "interpreting the spoken input in a manner that at least one of the multiple applications recognizes the interpreted spoken input" as claimed in claim 1.

Base Claims 1, 7, 13, and 19 further recite a turns manager that prioritizes audible rendering of the responses according to rules other than the order in which the responses are added to the speak queue. Instead, the responses can be prioritized according to corresponding contexts in a context priority queue. The context can be associated with the current application. For example, answers can jump to the front of the queue, ahead of questions. See Specification, page 15, lines 27-30, and page 19, lines 2-3.

Wang discloses a system whereby the dialog manager carefully controls the flow of the conversation through a series of specific dialog state questions and answers in which all dialog states are described in an external knowledge base. The dialog states are pushed onto and popped from the stack in the order in which they were stored, as is the nature of a stack. Thus, Wang does not prioritize "audible rendering of the responses according to rules other than the order in which the responses are added to the prioritized speak queue and according to corresponding contexts in a context priority queue" as claimed in claim 1.

Dependent Claim 2 recites a turn manager that is subject to behavioral goals that include asking the user permission before providing speech when answers and notifications are delayed. The instant office action indicates that Wang's question of "Do you want this train?" reads on this limitation. Applicants respectfully submit that this is merely an answer to a question, not asking the user permission before providing speech delays occur. Indeed, column 10, lines 30-

31 states that “That execution is just in response to part of the user’s question.” and makes no reference to requesting permission based on answer and notification delays.

Dependent Claim 2 further recites that the turn manager allows the user to change subjects. The office action indicates that Wang’s technique whereby “the user’s input changes the goal of the system state” reads on this limitation. Applicants respectfully submit that changing goals is just a sub-goal that is still within the user’s original goal of ordering a ticket. For example, when ordering a ticket, if a database query is required, a new ‘goal’ is created but the user’s original goal is pushed on the stack. Therefore, this new goal is still within the same original application or subject.

Thus, neither Wang nor Marx, alone or in combination, recite a turn manager that is “subject to behavioral goals that include ... asking permission of the user before providing speech output based on delayed answers and notifications and allowing the user to change subject” as claimed in dependent Claim 2.

Independent Claims 7, 13, and 19 have been amended to include similar limitations as base Claim 1 and are allowable for the same reasons as Claim 1.

Since Claims 2-6 and 21 depend from now amended base Claim 1, Claims 8-12 depend from now amended base Claim 7, and Claims 14-18 depend from now amended base Claim 13, they are allowable for at least the same reasons. Therefore, Applicants respectfully request that the rejection of Claims 1-19, and 21 be withdrawn.

Information Disclosure Statement

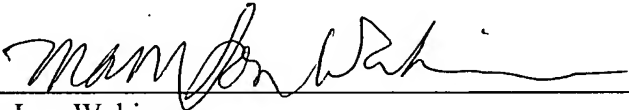
An Information Disclosure Statement (IDS) is being filed concurrently herewith. Entry of the IDS is respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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